CLAIMS

1. An optical transmission system having:

an optical transmitter for transmitting incoherent light;

an excitation mechanism for exciting a predetermined mode in the incoherent light transmitted from the optical transmitter or the incoherent light transmitted from the optical transmitter via a multimode optical transmission line; and

a transmission mechanism for transmitting a predetermined mode in the incoherent light transmitted from the excitation mechanism via a multimode optical transmission line.

2. An optical transmission system having:

an optical transmitter for transmitting incoherent light;

an excitation mechanism for exciting a predetermined mode in the incoherent light transmitted from the optical transmitter or the incoherent light transmitted from the optical transmitter via a multimode optical transmission line;

a transmission mechanism for transmitting a predetermined mode in the incoherent light transmitted from the excitation mechanism via a multimode optical transmission line; and

an optical receiver for receiving the incoherent light transmitted from the transmission mechanism or the incoherent light transmitted from the transmission mechanism via a multimode optical transmission line.

3. An optical transmission system having:

an optical transmitter for transmitting incoherent light;

an excitation mechanism for exciting a predetermined mode

in the incoherent light transmitted from the optical transmitter or the incoherent light transmitted from the optical transmitter via a multimode optical transmission line;

a multimode optical transmission line for transmitting the incoherent light transmitted from the excitation mechanism; and

a transmission mechanism for transmitting a predetermined mode in the incoherent light transmitted from the excitation mechanism via the multimode optical transmission line.

4. An optical transmission system having:

an optical transmitter for transmitting incoherent light;

an excitation mechanism for exciting a predetermined mode in the incoherent light transmitted from the optical transmitter or the incoherent light transmitted from the optical transmitter via a multimode optical transmission line;

a multimode optical transmission line for transmitting the incoherent light transmitted from the excitation mechanism;

a transmission mechanism for transmitting a predetermined mode in the incoherent light transmitted from the excitation mechanism via the multimode optical transmission line; and

an optical receiver for receiving the incoherent light transmitted from the transmission mechanism or the incoherent light transmitted from the transmission mechanism via a multimode optical transmission line.

5. The optical transmission system according to any one of claims 1 to 4, wherein the optical transmitter has an incoherent light source and a optical modulator for modulating light emitted from

the incoherent light source and outputting the modulated light as the incoherent light.

6. The optical transmission system according to any one of claims 1 to 4, wherein the optical transmitter has an incoherent light source which can be directly modulated and emits the incoherent light.

7. The optical transmission system according to claim 5, wherein the incoherent light source is an ASE light source.

8. The optical transmission system according to claim 6, wherein the incoherent light source is an ASE light source.

9. The optical transmission system according to claim 3 or 4, wherein a graded-index optical transmission line is used as the multimode optical transmission line.

10. The optical transmission system according to claim 9, wherein the graded-index optical transmission line takes the form of a graded-index multimode optical fiber having a core diameter of 40 μm or more and 100 μm or less.

11. The optical transmission system according to claim 9, wherein the graded-index optical transmission line takes the form of a graded-index multimode optical fiber having a core diameter of 50 μm or 62.5 μm.

12. The optical transmission system according to claim 3 or 4, wherein a step index optical transmission line is used as the multimode optical transmission line.

13. The optical transmission system according to claim 12, wherein the step index optical transmission line takes the form of a step index multimode optical fiber having a core diameter

of 40 μm or more and 100 μm or less.

14. The optical transmission system according to claim 12, wherein the step index optical transmission line takes the form of a step index multimode optical fiber having a core diameter of 50 μm or 62.5 μm.

15. The optical transmission system according to any one of claims 1 to 4, wherein the predetermined mode is a base mode.

16. The optical transmission system according to any one of claims 1 to 4, wherein a single-mode optical transmission line is used as the excitation mechanism.

17. The optical transmission system according to claim 16, wherein a single-mode optical fiber is used as the single-mode optical transmission line.

18. The optical transmission system according to claim 16, wherein a single-mode planar lightwave circuit is used as the single-mode optical transmission line.

19. The optical transmission system according to any one of claims 1 to 4, wherein the excitation mechanism includes a lens that transmits the incoherent light transmitted from the optical transmitter, a predetermined low-order mode in the incoherent light transmitted from the optical transmitter is condensed by the lens, and the resultant light is transmitted.

20. The optical transmission system according to any one of claims 1 to 4, wherein the excitation mechanism includes a diaphragm having an aperture that passes the incoherent light transmitted from the optical transmitter, a predetermined low-order mode in the incoherent light transmitted from the

optical transmitter is selected by the diaphragm, and the resultant light is transmitted.

21. The optical transmission system according to claim 20, wherein the diaphragm includes a first diaphragm for passing the incoherent light transmitted from the optical transmitter and a second diaphragm for passing the incoherent light passed through the first diaphragm.

22. The optical transmission system according to any one of claims 1 to 4, wherein a single-mode optical transmission line is used as the transmission mechanism.

23. The optical transmission system according to claim 22, wherein a single-mode optical fiber is used as the single-mode optical transmission line.

24. The optical transmission system according to claim 22, wherein a single-mode planar lightwave circuit is used as the single-mode optical transmission line.

25. The optical transmission system according to any one of claims 1 to 4, wherein the transmission mechanism includes a lens that transmits the incoherent light transmitted from the excitation mechanism, a predetermined low-order mode in the incoherent light transmitted from the excitation mechanism is condensed by the lens, and the resultant light is transmitted.

26. The optical transmission system according to any one of claims 1 to 4, wherein the transmission mechanism includes a diaphragm having an aperture that passes the incoherent light transmitted from the excitation mechanism, a predetermined low-order mode in the incoherent light transmitted from the

excitation mechanism is selected by the diaphragm, and the resultant light is transmitted.

27. The optical transmission system according to claim 26, wherein the diaphragm includes a first diaphragm for passing the incoherent light transmitted from the excitation mechanism and a second diaphragm for passing the incoherent light passed through the first diaphragm.